DOCUMENT RESUME

ED 306 944 IR 013 788

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TITLE	Accessing ERIC with Your Microcomputer: Update.
INSTITUTION	ERIC Clearinghouse on Information Resources, Syracuse, N.Y.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
REPORT NO	EDO-IR-88-9
PUB DATE	Dec 88
CONTRACT	RI88062008
NOTE	3p.; This ERIC Digest is an update of ED 270 100.
AVAILABLE FROM	ERIC Clearinghouse on Information Resources, 030 Huntington Hall, Syracuse University, Syracuse, NY 13210-2340 (free while supply lasts).
PUB TYPE	Guides - General (050) -- Reports - Descriptive (141) -- Information Analyses - ERIC Information Analysis Products (071)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Computer Software; Databases; *Microcomputers; *Modems; *Online Systems; *Online Vendors; Telecommunications
IDENTIFIERS	*Communications Software; *ERIC; ERIC Digests

ABSTRACT

This digest describes how to use a microcomputer as a terminal to access ERIC online. Hardware and software requirements are explained, configuring the software is described, and basic requirements for specific microcomputers are listed. One diagram is included. (EW)

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ERIC DIGEST

December 1988 EDO-IR-88-9

ED306944

ACCESSING ERIC WITH YOUR MICROCOMPUTER: Update.

by Jane Klausmeier Janis

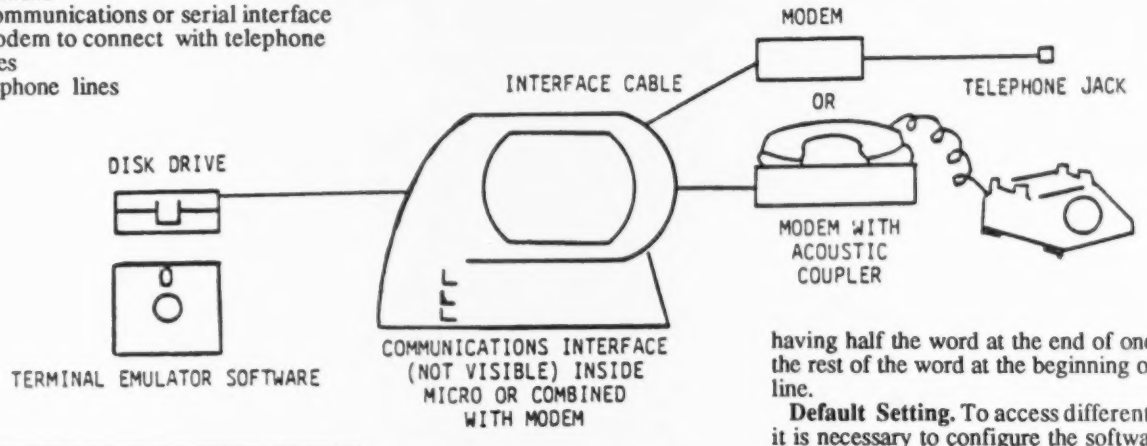
This digest describes how to use your microcomputer as a terminal. It covers:

- Hardware and software requirements;
- Configuring the software; and
- Basic requirements for specific microcomputers

What is needed to make a microcomputer act as a terminal?

Any microcomputer can be used as a terminal when the following requirements are met:

- Software—communications or terminal emulator software
- Hardware
  - — communications or serial interface
  - — modem to connect with telephone lines
- Telephone lines



Software—Communications or Terminal Emulator Software

A computer needs certain instructions to make it act as a terminal to communicate with another computer. It is possible to make your microcomputer act as a dumb terminal using only a modem and the communications interface in most situations, but for database searching other features are desirable. The need for these special features depends on individual requirements. For example, unless you have some way of storing a search to disk or to a printer, you won't be able to reference the search later. Software differs for every computer and operating system. It is important that you experiment with the software on a system like your own or have some kind of return policy before purchasing.

Some special features in communications software that should be considered are listed below. These features are desirable for using your microcomputer as a terminal to do database searching. If you have other uses for a terminal (e.g., accessing a large mainframe computer), other features will be needed as well.

Print. This feature allows the screen display to be printed. Some software allows you to print simultaneously, while in other cases it is necessary to save to disk and load the disk's contents to the printer later.

Save. This feature lets you save the screen display on a disk.

Access to Command Mode. It is desirable to be able to turn the printer on and off, change duplex settings, and access other system commands without breaking the connection with the vendor.

Format Display. Material being displayed on the screen will be formatted so that complete words will appear instead of having half the word at the end of one line and the rest of the word at the beginning of the next line.

Default Setting. To access different vendors, it is necessary to configure the software for the vendor. It is very useful to be able to pre-designate the configuration and then refer to that default setting (see *Configuring the Software*).

Status Indicator. Each software package provides certain options, e.g., printer on or off, write to disk, etc. It is helpful to be able to go to a menu that indicates the status of these options at any stage.

A communications software package called Smartcom can be purchased with Hayes modems, while Racal Vadic provides the software with the modem. There are also two public domain communications programs for the IBM PC and compatibles called Q-Modem and PC Talk. They are available through microcomputer clubs or bulletin boards.

Configuring the Software

In order for a microcomputer to interface (access) the major vendors (BRS, DIALOG, or SDC), certain technical requirements, sometimes called telecommunications protocols, need to be set. This is called configuring the microcomputer and is part of the software. Baud rate, parity, duplex, and data length are examples of the settings that need to be made. The con-

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figuration settings vary for each vendor. Documentation from the vendors should include the necessary information, or they can be contacted directly.

- **DIALOG:** 1-800-3-DIALOG
- **BRS:** 1-800-345-4277
- **SDC:** 1-800-421-7229 or 1-800-352-6689 (CA)

Depending on the kind of microcomputer you use as a terminal, which vendor you access, and which telephone network you use—Tymnet, Telenet, or Uninet—certain commands need to be added to the protocol. For example, if you are using a printer during your search, certain commands are necessary to slow down transmission so that no data is lost. The vendors can give you this information.

Hardware

In order for data to be sent over a distance via the telephone lines, it is first necessary to convert from parallel transmission (i.e., sending 8 bits of data simultaneously) to serial transmission, which sends each bit one after the other or consecutively. This is accomplished by an EIA (Electronic Industries Association) RS-232C interface, the communications interface. Each computer manufacturer has a different way of referring to this interface (see the list below). It can be called a communications card, an interface module, an RS-232C interface or port, serial interface, or any combination of these. The RS-232C interface can also be combined with the other essential element in using your computer as a terminal, the modem.

Modem is an acronym for MOdulator/DEModulator. Because it would be very expensive and inefficient to run direct lines from individual terminals to the large vendors, telephone lines are used to transmit the signals. To do this, serial transmissions need to be converted (or modulated) from digital to audio signals. At the other end, the audio signals have to be demodulated back into digital serial mode.

The speed at which data is being sent and received has to be the same. This speed needs to be designated in the communications protocol. Most vendors support the range of possible modem speeds from 300 to 9600 baud. Because the user is being charged for the amount of time spent online with the vendor, it is advantageous to use as high a baud rate as possible (1200 up to 9600). Though it is true that the faster the baud rate the more expensive the modem, prices for the faster modems continue to decline.

Lines from the RS-232C interface are connected to the modem, which is then hooked into the telephone line. This is done with either a modular jack or an acoustic coupler. A modular jack is the plug used to connect a regular telephone. If the plugs are compatible, the regular phone can be unplugged and the modem connected. An acoustic coupler is a modem that uses the handset on a telephone to connect with the phone lines. The modem has two cups that hold the receiver (handset) to allow transmission of audio signals. Usually a cable with adapters is needed to make the connection between the RS-232C interface and the modem.

The communications interface and modem can also be combined on a single board that fits into a slot inside the micro and connects directly with the telephone. This is called an internal modem.

Some of the popular microcomputers and the components necessary to access the vendors are listed below.

Microcomputers and Necessary Hardware / Software

APPLE II, II PLUS, IIe
Telephone modem (Hayes Micromodem II suggested)
Communications card (Serial or Superserial)
Software available with Hayes modems

APPLE IIc
Apple Personal Modem or Hayes External Modem
Built-in RS-232 port
Apple Access

MACINTOSH
Apple Personal Modem or Hayes External Modem
Built-in RS-232 port
For Macintosh-MacTerminal software

COMPAQ
RS-232 interface
Hayes or Hayes compatible modem
Public domain software or software available with modem

IBM PERSONAL COMPUTER
Modem—Hayes Smartmodem, IBM Hayes compatible modem, or Racal Vadic
RS-232 interface (serial port built in on most models)
Public domain software, e.g., PC TALK, ProComm
Software available with modem

LEADING EDGE
Built-in RS-232 interface
Hayes or Hayes compatible modem
Public domain software or software available with modem

TEXAS INSTRUMENTS 99/4, 99/4A
Modem
RS-232 interface
Terminal EMULATOR II software cartridge

TRS-80
Modem
RS-232 interface board
RS Term software

Most CP/M-based microcomputers
Modem
RS-232 port
Communications software

This digest was prepared by Jane Klausmeier Janis, Operations Manager of the ERIC Clearinghouse on Information Resources. December 1988.

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This publication was prepared with funding from the Office of Educational Research and Improvement, U.S. Department of Education, under contract no. RI88062008. The opinions expressed in this report do not necessarily reflect the positions or policies of OERI or ED.